

NOTES ON SOME CHRYSIDIDAE AND SPHECIDAE IN THE COLLECTION OF THE OSAKA MUSEUM OF NATURAL HISTORY, WITH DESCRIPTIONS OF THREE NEW SPECIES (HYMENOPTERA)*

Katsuji TSUNEKI

Biological Laboratory, Fukui University, Japan

Recently, through the courtesy of Mr. I. HIURA, I had a chance of examining 204 specimens of wasps belonging to Chrysididae and Sphecidae preserved in the collection of the Osaka Museum of Natural History. Among them I found one new species of Chrysididae (Cleptinae), two new species of Sphecidae (Trypoxyloninae and Crabroninae) and some taxonomically or distributionally interesting species. The descriptions and records of these species will be given in the present paper.

On this occasion I thank Mr. I. HIURA for his kindness in affording me a chance of publishing this paper.

Descriptions and records

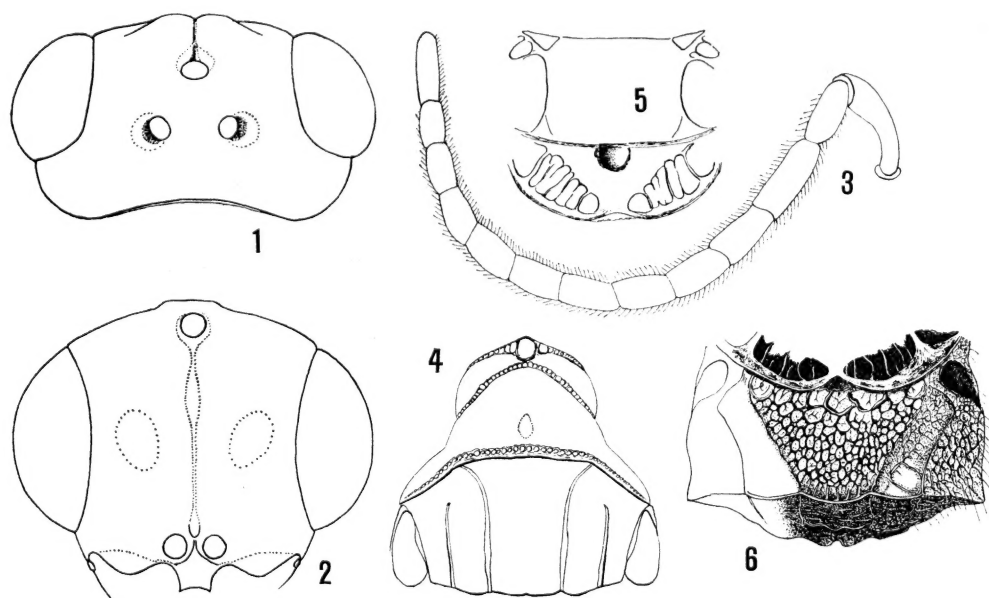
1. *Cleptes venustus* sp. nov.

This species is somewhat similar in structure to *Cleptes japonicus* TOSAWA, but is much smaller, different in colour of the head and thorax, with the median facial furrow distinct, with the postscutellum strongly pitted at the base in the middle and having the general body punctuation much sparser and the propodeum quite otherwise sculptured.

♂. Length 4.0 mm. Head, thorax, mandibles except brownish apices, antennal scapes and front legs from base to femur metallic blue, variegated with green and black. Strongly greenish areas: Lower front largely, base of mandibles externally, antennal scape, temples just behind eyes, lateral lobes of mesonotum largely, scutellum wholly (posteriorly golden green), greater part of mesopleurons, and coxae and femora of legs except beneath. Black areas: Vertex, occiput, disc largely of pronotum, base and median lobe of mesonotum, propodeum above at base and apex and whole of its posterior inclination. Mid and hind femora above narrowly and rather faintly blue, their tibiae above similarly greenish. Antennae from joint 2 apically, greater part of wing veins and stigma and rest of legs dark brown, tarsi beneath paler. Abdomen nearly black, sides at base of 2nd and 3rd tergites blue.

* Contributions from the Osaka Museum of Natural History, No. 101

Head from above: Fig. 1; vertex convex and deeply impressed at the outside of each ocellus, the impressions obscure in outline at the external border, at anterior ocellus extending downwards as a median fine groove of the lower frons; OOD : POD : OCD = 6 : 3.5 : 6, occipital carina distinct, finely coriaceous. Head seen in front: Fig. 2, on each side of the median groove the surface with an oblique shallow lenticular impression, ratio of oculo-antennal space, diameter of antennal socket and interantennal space approximately 6 : 3.5 : 2, that of oculo-mandibular space 3; clypeus subquadrate, medianly longitudinally roundly raised, in some direction anterior margin gently roundly emarginate; mandibles stout, quadridentate at apex. Antenna: Fig. 3, length ratio of joints 3, 4, 5, 12 and 13 nearly 8, 5, 4.5, 4 and 5. Pronotum (Fig. 4) bisulcate, sulci similar in width to each other, distinctly foveolate (in *C. japonicus* posterior sulcus much wider), disc with a large impression medio-posteriorly, not distinct in outline; on mesonotum parapsidal furrow parallel to scutal furrow (in *japonicus* the two furrows anteriorly slightly convergent), scutellum (Fig. 5) subquadrate, postscutellum (Fig. 5) at base deeply roundly impressed; propodeum (Fig. 6) with sides very slightly divergent posteriorly, with posterolateral angles subrectangular, apex obtuse, dorsal and posterior aspects bordered by a transverse carina, in the posterior view the carina sinuate. On mesopleuron episternal scrobe large and deep, anterior oblique suture distinct and foveolate, but hypoepimeral suture shallow and not foveolate. Abdomen not so strongly roundly convergent anteriorly



Figs. 1-6. *Cleptes venustus* sp. nov.

- 1, head seen from above. 2, head seen in front. 3, antenna. 4, pro- and mesonotum.
- 5, scutellum and postscutellum. 6, propodeum with sculature partly drawn.

as in *japonicus*, rather resembling in form that of *fudzi*, but generally slightly more elongate than in both species, with ratio of length to width 50 : 33 (1.52) (in *japonicus* 70 : 48, namely 1.46 and in *fudzi* 73 : 50, namely 1.46), legs including hind femora normal, the structure of hind coxae invisible in the specimen. In fore wing radial cell similar in form to that of *fudzi*, slenderer than in *japonicus*, 1st discoidal cell also somewhat slenderer than in both species (though the character individually varied to a certain extent in both species).

Punctures generally much sparser than in the two species compared. On vertex comparatively strong and sparse, with intervals distinctly broader than points, only on ocellar region close, on lower frons (face) similarly sparse; pro-, mesonotum, scutellum, post-scutellum and mesopleuron scattered sparsely with hair-bearing punctures, punctures generally uniform and fine. Propodeum with sculpture very characteristic, on dorsal aspect medio-anteriorly somewhat strongly and roughly, on other areas weakly and finely reticulate, posteriorly convergent lateral furrows shallow and not striking, with sculpture very weak (Fig. 6), on posterior aspect sculpture also fine and weak, irregularly reticulate, rugose striae forming the reticulation mainly convergent posteriorly. On abdomen 1st tergite practically impunctate and polished, 2nd sparsely and finely punctured on anterior 2/3, 3rd and 4th wholly sparsely punctured, punctures posteriorly slightly larger, 5th impunctate; punctures on sternites 2-4 larger and somewhat closer. Body covered with greyish white comparatively long pubescence.

♀, unknown.

Holotype : ♂, Shirahama, Hachinohe-City, Aomori Pref., 11. VII. 1963, I. Hiura leg.

2. *Sphex* (*Sphex*) *argentatus argentatus* FABRICIUS, 1787

Since KOHL (1890) this species has long been called *S. umbrosus* CHRIST, but recently J. VAN DER VECHT (1961) corrected the misidentification. The Japanese specimens have the wings more darkly clouded as compared with the typical southern representatives and are called subspecies *fumosus* MOCSÁRY (KOHL, 1890).

The specimens from the Amami group of the Ryukyus, however, are clearly distinguished in this respect from those of Japan, north of Amami Is., and belong to the typical race. This is an unpublished fact. In the collection of the Osaka Museum were found the following two specimens :

1 ♀ 1 ♂, Okinoerabu Is., 24. VIII. 1958, M. Okamoto leg.

3. *Ammophila* (*Ammophila*) *clavus* (FABRICIUS, 1775)

As to the taxonomic problem of the specimens of our region I already gave discussion elsewhere at some length. I still have a question that this species may generally follow the BERGMANN's rule and the specimens of our region may represent a larger race.

In Japan this species has hitherto been known as far northwards as Fukui Prefecture

on the Japan Sea side and on the Pacific side as Saitama Prefecture. In the material examined I found the following specimens that extend far northwards the northern limit of distribution of this species:

2 ♀♀ 3 ♂♂, Yajima, Yuri, Akita Pref., 29, 30. VII. 1959, I. Hiura leg.

4. The prey of *Tachytes sinensis* SMITH, 1856

The nesting biology of this species was once observed in Korea and published under the misidentified name, *T. etruscus* ROSSI. (TSUNEKI, K. 1946). In Japan nothing has been known about the biology of this species. A specimen in the Museum's collection was accompanied on the same pin with an Orthopterous insect. It was doubtlessly a prey carried by the wasp when it was captured. It is a nymph of *Holochlora japonica* BR. v. WATT. This is a species new to the prey records of *Tachytes sinensis*.

Data of the material: Tochiharadani, Kanzaki-gun, Hyogo Pref., 4. VIII. 1963, I. Hiura leg.

5. *Cerceris albofasciata* (ROSSI, 1790) (= *navitatis* F. SMITH)

This species is widely distributed over Palaearctic region, and in East Asia it has been recorded from Inner Mongolia, Manchuria, North China, Korea, (Formosa?), and Japan. Within the Japanese Archipelago this species has been known from Hakodate (type locality), Iwate, Chiba, Osaka and Fukuoka Prefs. only. In the collection I found, beside a number of the specimens from Osaka and district, five specimens captured in Aomori Prefecture.

Specimens examined: 5 ♂♂, Shariki~Takayamainari, Nishitsugaru-gun, Aomori Pref., 2. VII. 1964, I. Hiura leg.

6. *Nippononysson rufopictus* YASUMATSU et MAIDL, 1937

This species has been known from Hokkaido, Honshu, Kyushu, and the Island of Amami-Oshima (one of the Ryukyus), but is everywhere rare.

Specimen examined: 1 ♀, Mt. Ohdaigahara, 28. VII. 1952, O. Sato leg.

7. *Trypoxylon pulawskii* TSUNEKI, 1956

Up to the present the distribution records of this species have been restricted to several Prefectures of Central Japan, namely, Tochigi, Tokyo, Ishikawa, Fukui and Kyoto, and the species is everywhere not abundant. The following is a new record of distribution:

1 ♀, collected in a room of a house in the City of Osaka, 12. VIII. 1952, K. Matsumoto leg.

8. *Trypoxylon kyotoense* sp. nov.

This species is closely allied to *T. malaisei* Guss., but is separable from it by the difference in the structure of the clypeus and in the coloration of the mandibles. It resembles also *T. regium* Guss. in many characters including the structure of the clypeus

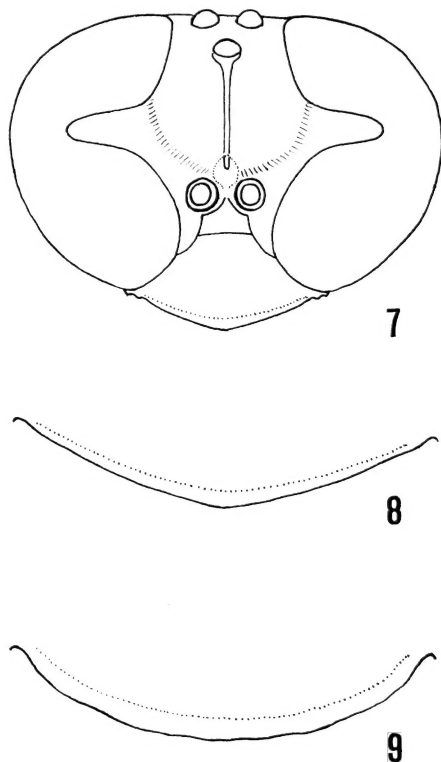
and propodeum, but can be distinguished therefrom by the coloration of the mandibles and by the characters of the radial cell of the fore wing.

♀. Length of head and thorax combined 6.0mm, 1st abdominal segment 4.7mm, fore wing 9.0 mm. (Total length presumably 16–17 mm, —abdomen except basal 3 segments lacking). Black. From apical portion of 1st abdominal segment to base of 3rd yellowish red, with a blackish spot medio-apically on 1st and 2nd. Mandibles dark brown, basally nearly black, having a very conspicuous yellowish white fleck near apex on outer margin; palpi ferruginous, tegulae, veins of wings and tibial spurs brown; wings slightly clouded and darker apically. Pubescence covering the body and appressed hairs on clypeus and sides of frons similar to those of *T. malaisei*.

Head from above with ocelli in a nearly equilateral triangle, OOD : POD = 4 : 4.5 (proportion of postocellus 6), anterior ocellus distinctly smaller¹⁾. Head seen in front (Fig. 7) comparatively somewhat wider than in *malaisei*, ratio of interocular distance at vertex and at base of clypeus

23 : 20, structure of frons (including the median furrow and supra-antennal tubercle with the shining carina on top) as in *malaisei*. Antennal joint 3 about 4 times as long as wide at apex; the proportion between oculo-antennal space, interantennal space and diameter of antennal socket as in the compared species. Clypeus without medio-apical protuberance, with the anterior margin generally rounded, but precisely somewhat angulated towards middle (Fig. 8), not broadly rounded as in *regium* (Fig. 9), apical marginal bevelled area far narrower than in *regium*.

Structure of thorax and propodeum as in *malaisei* or *regium* (area dorsalis distinctly margined by the furrow, also with median longitudinal furrow), but the episternal scrobe is larger than in the latter species. The 1st abdominal segment long, petiolated, structured as in *malaisei*, slightly more than 5 times as long as wide at the widest portion before



Figs. 7–8. *Trypoxylon kyotoense* sp. nov. Fig. 9. *T. regium* GUSSAKOVSKIJ. 7, head seen in front. 8, anterior margin of clypeus. 9, ditto.

1) In many species of *Trypoxylon* this character is fairly varied within a species. It is therefore uncertain whether the character is constant to the species or not.

apex (measured from the base of the basal ligament), distinctly more than as long as the two following segments united. Wing venation as in *malaisei*, with the radial cell of fore wing almost reaching the apex. Legs without note-worthy characters.

Punctuation as in *malaisei* or *regium*, but the punctures on mesonotum, scutellum and propodeum generally finer and sparser.

♂, unknown.

Holotype: ♀, Kibune, Kyoto Pref., 5. IX. 1946, K. Matsumoto leg.

Remarks. This species may be a particular aberrant form of *Trypoxylon malaisei* GUSSAKOVSKIJ. But the difference in the structure of the clypeus far surpasses the range of variation in this species, and further, the white maculated mandibles are quite remarkable. During the study I have comparatively examined 58 female specimens of *T. malaisei* at my hand that were collected in Korea (Shoyozan and Temmasan), Hokkaido (Sapporo, Jozankei, Ebetsu), Honshu (Pref. Aomori, Niigata, Ishikawa, Fukui, Tochigi, Saitama, Tokyo, Kyoto, Osaka, Hyogo), Shikoku (Kochi) and Kyushu (Fukuoka and Kagoshima) and reconfirmed the state of variation of the clypeal from in this species. Certainly there was a more or less variation in the form and degree of protrusion of the medio-apical protuberance, but in no specimen could I find the clypeus that was not provided with the protrusion. The mandibular coloration was also varied. It was basally black and apically pale brown. The extent of the brownish portion was fairly variable, but I could find none wherein it was adorned with white maculation.

9. *Psen (Psen) aurifrons* TSUNEKI, 1959

In this species the male has curiously deformed mid legs and occurs rather rarely as compared with the female. Quite exceptionally to the *Psen (Psen)* group, they live in the human village in flat land as well as in the montanic region, but everywhere they are not common. The known locations of distribution of this species: Hokkaido (Sapporo, Jozankei, Sounkyo) and Honshu (Towada, Sakata, Mt. Haku, Tochigi, Saitama, Tokyo, Shizuoka, Fukui, Kyoto and Hyogo). The following found in the Museum collection are new to the distribution records of this species:

1 ♂, Sawadani, Hinadadani, Tokushima Pref., 8. VIII. 1956, I. Hiura leg.

1 ♀, Tsutsujidani, Mt. Kongo, Osaka Pref., 27. V. 1964, I. Hiura leg.

The record of Shikoku is especially remarkable.

10. *Psen (Psen) hakusanus* TSUNEKI, 1959

Specimen: 1 ♂, Byobuzaku, Mt. Kongo, Osaka Pref., 17. VI. 1964, I. Hiura leg.

11. *Psenulus (Psenulus) maculipes* TSUNEKI, 1959

Specimen examined: 1 ♀, Inamuragatake, Nara Pref., 10. VIII. 1959, H. Ono leg.

12. *Psenulus (Psenulus) fuscipes* TSUNEKI, 1959

Specimen examined: 1 ♂, Mt. Gomadan, Wakayama Pref., 31. VII. 1957, I. Hiura leg.

Remarks. The three species of Psenini listed in Nos. 10–12 have been known to occur from the central montanic region of Honshu as far northwards as Hokkaido. At the present date, therefore, they represent respectively the southernmost record of distribution of the respective species.

13. *Lestica* (*Lestica*) *collaris* (MATSUMURA, 1912)

This species is also one of the northern derivatives, common in Hokkaido and occasionally found in the mountainous region of the northern half of Honshu. Probably it will be discovered in future on the high mountains of Shikoku and Kyushu. At the present date, however, the following in the Museum collection represents the southern limit of distribution record of the species:

Specimen examined: 1 ♂, Mt. Ohdaigahara, Nara Pref., 30. VII. 1952, O. Sato leg.

14. *Crossocerus* (*Cuphocterus*) *monstrosus suzukii* (MATSUMURA, 1912)

Specimen examined: 1 ♂, Mt. Ohdaigahara, Nara Pref., 2. VIII. 1953, O. Sato leg.

15. *Crossocerus* (*Cuphocterus*) *hakusanus* TSUNEKI, 1954

Specimens examined: 1 ♀, Mt. Ohdaigahara, Nara Pref., 2. VIII. 1953, O. Sato leg.; 1 ♂, Mt. Iwawaki, Osaka Pref., 10. VI. 1960, I. Hiura leg.

Remarks. The two species of Crabroninae listed above show the same distributional state as *Lestica collaris*, except for the fact that they are everywhere not abundant. The specimens captured on Mt. Ohdaigahara, therefore, the southernmost record of distribution of each species. *C. hakusanus* is new to the fauna of Osaka Prefecture.

16. *Crossocerus* (*Coelocrabro*) *hiurai* sp. nov.

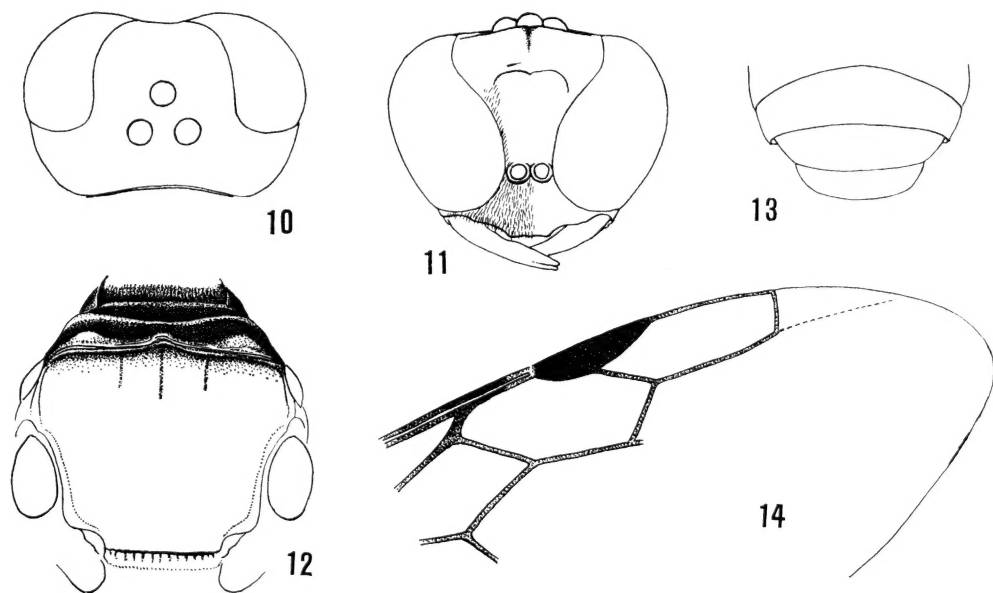
This species is characteristic in the maculation of the head and thorax and can be separated from every known species of the subgenus by the combination of the following characters:

Legs normal, area cordata well marked off by the enclosing furrow, mesopleuron unarmed, end segment of abdomen broad and not provided with pygidial area, 7th sternite normal, end joint of antennae normal and head and thorax characteristically maculated.

♂. Length 4.5 mm. Black with the following portions yellow: Mandibles except brownish apices, maxillae and labium with palpi, clypeus except a small medio-basal blackish fleck, hypostomium adjacent to the base of mandibles, antennal scapes except anterior brownish streak, pedicels at apices, flagella beneath, two faint spots on pronotum, humeral angles, epicnemial areas wholly, a fleck on prosternum just behind front coxae, a spot on meso- and metasternum in front of mid and hind coxae respectively, front legs except base of coxae and femora above largely (brown, inside of tibiae and tarsi wholly somewhat brownish), mid legs except coxae at base, femora above (pale brown) and apical portion of tibiae (pale brown) (tarsi somewhat brownish) and hind legs except coxae largely, femora wholly, tibiae externally and tarsi largely (basitarsi above yellow). Rest

of antennal flagella and tegulae and veins of wings dark brown. Mandibles and legs glossy. Clypeus and sides of lower frons covered with silvery hairs; hairs on head above short, somewhat brownish, on thorax and abdomen above short and black, on the sides of head and thorax greyish white and on mesosternum comparatively long, dense, appressed and hoary white.

Head from above: Fig. 10, with frontal impressions ill-defined, frontal median furrow not strong, but distinct, ocelli in an equilateral triangle, $OOD:POD=3:2$, ocelli similar in size to one another and slightly larger in diameter than POD ; occipital carina distinct, gradually ending beneath head, not reaching hypostomial carina. Head seen in front: Fig. 11, lower frons medianly longitudinally broadly concave and connected above with the upper frontal furrow, oculo-antennal space unll; clypeus medianly produced, with apical margin bluntly tridentate, mandibles bifid at apex; antennal joint 1 without longitudinal carina in front, joints 3-5 beneath with a row of comparatively long curved hairs, joint 3 about 1.5 times as long as wide at apex, joint 7 as long as wide, terminal joint 1.7 times as long as wide at base, not truncate at apex. Pronotum from above: Fig. 12, anteriorly transversely incrassate and posteriorly depressed, with anterior aspect steeply sloped; on mesonotum (Fig. 12) prescutal sutures feeble, each accompanying a faint carina, median scutal line weakly impressed only at base, parapsidal sutures short and weak; mesopleuron without precoxal process; scutellum convex, slightly wider than long (ratio



Figs. 10-14. *Crossocerus (Coelocrabro) hiurai* sp. nov.

10, head seen from above. 11, head seen in front. 12, pro- and mesonotum.
13, apical four segments of the abdomen. 14, venation of fore wing.

5 : 4), the furrow between scutellum and postscutellum lunate in form, deep ; on propodeum area dorsalis distinctly enclosed by crenate furrow, with median furrow strong and crenate, posterior aspect medianly deeply furrowed and separated from the sides of the segment by the carinae that accompanied with a groove. The first segment of abdomen slightly longer than wide at apex (ratio 25 : 22), end segment comparatively broad, lunate in form (Fig. 13). Venation of fore wing: Fig. 14, the 2nd abscissa of radial vein approximately twice as long as the 1st abscissa, transverse radial vein slightly less than as long as the 1st abscissa, appendicular cell present, with veins obscure. Legs normal, front tibiae without spines, mid and hind tibiae with only 1 or 2 weak ones externally, mid tibiae without formal spur, hind tibiae with 2 spurs as usual, but the external one lanceolate, longer than half of hind metatarsus.

Upper frons closely punctured with minute points, the punctuation posteriorly sparser and on vertex practically impunctate, occiput with close fine hair-bearing points. Mesonotum anteriorly closely punctured, punctures posteriorly sparser, with intervals slightly larger than points, on posterior margin not crenate, but the scuto-scutellar furrow very coarsely foveolate with 4 intersecting carinae, scutellum with sparse fine hair-bearing punctures, postscutellum laterally and area dorsalis at base longitudinally striate, the disc of the area and posterior aspect of the segment smooth and polished, the sides on dorso-anterior and posterior portions obliquely very finely and closely striate. Abdomen practically impunctate.

♀, unknown.

Holotype: ♂, Shimanotani, Kawachinagano, Osaka Pref., 12. VI. 1962, I. Hiura leg.

17. *Rhopalum* (*Rhopalum*) *venustum* TSUNEKI, 1955

To me it was a great surprise that I found one example of this very rare species among the specimens of the Osaka Museum. So far it has been known to occur in Koike, a very small village, about 800 m above the level of the sea, in the eastern montanic region of Fukui Prefecture.

Specimen examined : 1 ♀, Shimanotani, Kawachinagano, Osaka Pref., 12. VI. 1962, I. Hiura leg.

Main literature

- TSUNEKI, K. 1955 Two new species of the genus *Rhopalum* from Japan. Kontyu, 23 : 105-108.
 — 1956. Die Trypoxylonen der nordöstlichen Gebiete Asiens (Hymenoptera, Sphecidae, Trypoxyloninae). Mem. Fac. Lib. Arts, Fukui Univ., II, 6 (1) : 1-42.
 — 1958-65. A guide to the study of the Japanese Hymenoptera. 2-22. Life Study, 2(2)-9(1-2). (In Japanese, sometimes with English key).
 — 1959. Contributions to the knowledge of the Cleptinae and Pseninae Fauna of Japan and Korea (Hymenoptera, Chrysididae and Sphecidae). Mem. Fac. Lib. Arts, Fukui Univ., II, 9(1) : 1-78.
 — 1961. Studies on *Cerceris* of northeastern Asia (Hymenoptera, Sphecidae). Ibid., 11(1) : 1-72.

- 1962. Taxonomic notes on *Amnophila* KIRBY (s. latr.) of Japan and Korea. Life Study, 6(2) : 28-29.
- 1964. The genus *Tachytes* PANZER of Japan and Korea. Etizenia, 5 : 1-11.
- 1964. On some Aculeate Hymenoptera of Japan. Etizenia, 6 : 1-7.
- VECHT, J. VAN DER. Hymenoptera Sphecoidea Fabriciana. Zool. Verh., 48 : 1 —85.
- YASUMATSU, K. and MAIDL, F. 1936. A new genus and species of the Family Nyssonidae sensu KOHL from the Far East (Hymenoptera). Festschr. z. 60. Geburts. Embik STRAND, 1 : 501—504.